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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/890,181	12/27/2001	Michael Laycock	LAL-C522-US	7544..

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EXAMINER

OJINI, EZIAMARA ANTHONY

ART UNIT PAPER NUMBER

3723

DATE MAILED: 08/11/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/890,181

Applicant(s)

LAYCOCK, MICHAEL

Examin r

Anthony Ojini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,7,10 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,8,9 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Applicant's election of Group I, claims 1,2,5,6,8,9,11 in Paper No. 7 is acknowledged. However, claims 3, 4,7,10,12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Specification***

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Angle Head Grinding Apparatus.

### ***Drawings***

The drawings are objected to because it is unclear how the computer (50) is structurally connected to grinding machine.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the coolant supply unit

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must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1,2,5, 6,8, 9,11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**In claim 1**, in line 1, delete the term “conventional”;

in line 2, the phrase “the machine wheelhead” lacks antecedent basis;

in lines 2,3, the expression “the X and Z- axes of the machine” lacks antecedent basis;

and

in line 4 the phrase “the workpiece” lacks antecedent basis.

**In claim 5**, line 2, delete the term “conventional”.

**In claim 6**, in line 1, delete the term “conventional”; and

line 2, the term “itself” is unclear which element applicant referring to.

**In claim 8**, lines 4,5, the expression “the direction of advance and retraction of a wheelhead carrying a grinding wheel” lacks antecedent basis.

**In claim 9**, lines 2,3, delete the expression “or in the method of any one of claims 3,4 or 7”; and lines 14-28, the expression “ the wheel is mounted on a wheelhead.....or the workpiece is mounted on a carriage.....line of action” is unclear which element applicant is referring to.

**In claim 11**, lines 6,7, the phrase “the workpiece” lacks antecedent basis.

**In claims 5,6,8**, it is unclear what the claims comprise respectively.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8,11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohta et al.

**With respect to claim 8**, Ohta et al. disclose a computer controlled grinding machine comprising a workpiece (W) that is movable by means of a carriage (14) along an axis parallel to the axis of rotation of the workpiece and perpendicular to the direction of advance and retraction of a wheel head (12) carrying a grinding wheel (G) and in which the wheel is mounted for rotation about an axis which throughout remains parallel to the workpiece axis of rotation when programmed to move the wheelhead and the workpiece carriage along the two orthogonal directions so as to produce a net movement of the

wheel head relative to the workpiece along a line of action which subtends an angle of less than  $90^0$ , relative to the axis of rotation of the workpiece (see fig. 3).

**With respect to claim 11**, Ohta et al. disclose a computer controlled grinding machine comprising a grinding wheel (G) mounted on a wheel head (12) thereon for rotation about an axis which coaxial with the coincident axes of two orthogonal frusto-conical grinding surfaces (Ga,Gb) formed around the periphery of the grinding wheel (see figure 3), wherein the machine is programmed to produce relative movement between the wheel head and a workpiece along a line of action which is perpendicular to the axis of rotation of the wheel so that a single plunge grind will remove material from a radial and a cylindrical surface of the workpiece simultaneously (see figs. 1,2,3).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ohta et al.** in view of **Imai et al.** and **Wirz (4,475,319)**.

**With respect to claim 1**, Ohta et al. disclose a grinding machine (10) comprising a grinding wheel (G) mounted on a wheel head (12), for movement parallel to an X-axis (see fig. 3); a workpiece (W) rotating about an Z-axis that is perpendicular to the X-axis, wherein said workpiece is mounted on a carriage (14) which is movable parallel to the

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Z-axis, and wherein the wheel rotates about an axis which remains parallel to the workpiece axis of rotation; an X-axis drive means (13) for advancing and retracting the wheel head parallel to the X-axis; a Z-axis drive means (15) for moving the carriage parallel to the Z-axis, and a computer which is programmed to generate appropriate X-axis drive and Z-axis drive control signals to produce simultaneous movement of the wheel head and workpiece, such that the movement of the wheel head relative to the workpiece is along a line of action which subtends an angle with the Z-axis which is less than  $90^{\circ}$  wherein the external cylindrical surface of the grinding wheel serves to remove material from the cylindrical surface of the workpiece and an adjoining circular face of the wheel engages a radial shoulder of the workpiece to grind the latter to size as the wheel head is advanced along the line of action (see figs. 1,2,3).

**Ohta et al.** fail to disclose a grinding wheel mounted on a wheel head having drive means for moving the wheel head relative to the workpiece parallel to an X-axis and Z-axis respectively; and wherein the grinding wheel is mounted for rotation about an axis, which remains parallel to the axis of rotation of the workpiece.

**Wirz** discloses a grinding wheel (1) mounted on a wheel head (37) having drive means (44,45) for moving the wheel head relative to the workpiece parallel to an X-axis and Z-axis respectively.

**Imai et al.** disclose the grinding wheel (G) that is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece (see fig. 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al. with drive means for moving the wheel head relative to the workpiece parallel to an X-axis and Z-axis respectively in view of Wirz so as to axially displaced the grind wheel.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al. with grinding wheel that is mounted for rotation about an axis which throughout remains parallel to the axis of rotation of the workpiece, along a selected line of action into engagement with the workpiece in view of Imai et al. so as to subject the grinding wheel surface onto the cylindrical surface of the workpiece and attain a desired surface roundness and straightness.

**With respect to claim 2**, Ohta et al. disclose wherein the line of action achieved by the two X and Z movements of the wheel head is  $45^{\circ}$  (see fig.3).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. in view of Imai et al. and Jankowski as applied to claims 1 and 2 above, and further in view of Iwabuchi.

**With respect to claim 9**, Ohta et al. disclose the grinding wheel (G) comprise first frusto-conical surface (Ga), and second frusto-conical surface (Gb), wherein said first frusto-conical surface (Ga) is perpendicular to the second frusto-conical surface (see fig. 1). Ohta et al. also disclose the grinding wheel (G) is mounted for rotation about an axis which makes the same angle with the axis of rotation of the workpiece as the first frusto-conical surface make with the axis of rotation of the grinding wheel (fig. 3), so that



the said first frusto-conical surface (Ga) will cylindrically grind the cylindrical workpiece surface (see fig. 2). Ohta et al. further disclose the workpiece is mounted on a carriage (14) that slides parallel to the axis of rotation of the workpiece, and drive means (15) for moving the carriage, and the wheel head (13) and carriage drive means (15) are operated so as to achieve the same relative movement between the wheel and the workpiece, along a line of action, so as to move the wheel into engagement with the workpiece along a line of action (see fig. 2,3).

Ohta et al. fail to disclose a coolant is dispensed into the workpiece engaging region at least between the second frusto-conical grinding surface and the radial shoulder of the workpiece being ground.

**Iwabuchi** discloses a coolant that is dispensed into a workpiece engaging region at least between a grinding surface (8) and a workpiece (7) being ground.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al with coolant supply unit that is dispensed into a workpiece engaging region at least between the wheel grinding surface and a workpiece being ground in view of Iwabuchi so as to cool down the vicinity of the grinding point to thereby prevent a heat generation while the grinding machine grinds.

Claims 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al. in view of Imai et al.

**With respect to claim 5**, Ohta et al. disclose a computer controlled grinding machine comprising a wheel head (12), having a grinding wheel (G) mounted for rotation about

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an axis, along a selected line of action into engagement with a workpiece, wherein the line of action extends at an angle of less than  $90^0$  to the axis of rotation of the workpiece, so that ungrounded material forming part of a cylindrical surface of the workpiece and an adjoining radial end face of the workpiece can be ground in a single plunge grind, in which the wheel head moves along the said line of action into engagement with the workpiece and away therefrom after grinding when programmed (see figs. 1,2,3).

**Ohta et al.** fail to disclose the grinding wheel (G) is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece.

**Imai et al.** disclose the grinding wheel (G) that is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece (see fig. 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al. with grinding wheel that is mounted for rotation about an axis which throughout remains parallel to the axis of rotation of the workpiece, along a selected line of action into engagement with the workpiece in view of Imai et al. so as to subject the grinding wheel surface onto the cylindrical surface of the workpiece and attain a desired surface roundness and straightness.

**With respect to claim 6**, Ohta et al. disclose a grinding machine comprising a grinding wheel (G) mounted on a wheel head (12), that move along an X-axis; a workpiece (W)

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rotating about an Z-axis that is perpendicular to the X-axis, wherein said workpiece is mounted on a carriage (14) which is movable parallel to the Z-axis, and an X-axis drive means (13) for advancing and retracting the wheel head parallel to the X-axis; a Z-axis drive means (15) for moving the carriage parallel to the Z-axis, and a computer which is programmed to generate appropriate X-axis drive and Z-axis drive control signals to produce simultaneous movement of the wheel head and workpiece, such that the movement of the wheel head relative to the workpiece is along a line of action which subtends an angle with the Z-axis which is less than  $90^0$  wherein the external cylindrical surface of the grinding wheel serves to remove material from the cylindrical surface of the workpiece and an adjoining circular face of the wheel engages a radial shoulder of the workpiece to grind the latter to size as the wheel head is advanced along the line of action (see figs. 1,2,3).

**Ohta et al.** fail to disclose the grinding wheel (G) is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece.

**Imai et al.** disclose the grinding wheel (G) that is mounted for rotation about an axis, which throughout remains parallel to the axis of rotation of the workpiece (W), along a selected line of action into engagement with the workpiece (see fig. 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al. with grinding wheel that is mounted for rotation about an axis which throughout remains parallel to the axis of rotation of the workpiece, along a selected line of action into engagement with the

workpiece in view of Imai et al. so as to subject the grinding wheel surface onto the cylindrical surface of the workpiece and attain a desired surface roundness and straightness.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohta et al in view of Imai et al. as applied to claims 5,6 above, and further in view of Iwabuchi.

**With respect to claim 9**, Ohta et al. disclose the grinding wheel (G) comprise first frusto-conical surface (Ga), and second frusto-conical surface (Gb), wherein said first frusto-conical surface (Ga) is perpendicular to the second frusto-conical surface (see fig. 1). Ohta et al. also disclose the grinding wheel (G) is mounted for rotation about an axis which makes the same angle with the axis of rotation of the workpiece as the first frusto-conical surface make with the axis of rotation of the grinding wheel (fig. 3), so that the said first frusto-conical surface (Ga) will cylindrically grind the cylindrical workpiece surface (see fig. 2). Ohta et al. further disclose the workpiece is mounted on a carriage (14) that slides parallel to the axis of rotation of the workpiece, and drive means (15) for moving the carriage, and the wheel head (13) and carriage drive means (15) are operated so as to achieve the same relative movement between the wheel and the workpiece, along a line of action, so as to move the wheel into engagement with the workpiece along a line of action (see figs. 2,3).

Ohta et al. fail to disclose a coolant is dispensed into the workpiece engaging region at least between the second frusto-conical grinding surface and the radial shoulder of the workpiece being ground.

**Iwabuchi** discloses a coolant that is dispensed into a workpiece engaging region at least between a grinding surface (8) and a workpiece (7) being ground.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ohta et al with coolant supply unit that is dispensed into a workpiece engaging region at least between the wheel grinding surface and a workpiece being ground in view of Iwabuchi so as to cool down the vicinity of the grinding point to thereby prevent a heat generation while the grinding machine grinds.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wiener, Wirz (5,954,568), Jankowski (6,077,150), Maruyama et al., Asano et al., Furukawa et al., and Jankowski (6,491,568) disclose grinding machine respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Ojini whose telephone number is 703 305 3768. The examiner can normally be reached on 7.30 to 5.00 Tuesday-Friday with every other Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 703 308 2687. The fax phone numbers for the organization where this application or proceeding is assigned are 703 308 3590 for regular communications and 703 746 3277 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1148.

A handwritten signature in cursive script, appearing to read "Aepini".

AO  
July 29, 2003